

CLAIMS

What is claimed is:

1. A powder metal composition comprising a ferrous metal powder and a modified lubricant consisting essentially of a lubricant powder and fragmented cellulose fibers having an average length less than 150 μm and a diameter in the range from about 1 μ to 20 μ , the modified lubricant being present in an amount less than 2% by weight of the composition, the mixture having (i) a Hall apparent density numerically no smaller than 10% less than that obtained for the same powder metal mixture made with a conventional lubricant without the cellulose fibers, and (ii) a Hall flow rate which is at least 25 sec/ 50 g of mixture.
2. The composition of claim 1 wherein the lubricant powder is selected from the group consisting of fatty acid monoamides, fatty acid bisamides, metal soaps and polyolefin waxes.
- 15 3. The composition of claim 1 wherein the cellulose fibers have an average length in the range from about 1 μ but less than 70 μ and a Hall apparent density in the range from 2.7 to 3.5 g/cc.
- 20 4. In a powder ferrous metal mixture including a lubricant, the mixture having an Hall flow rate of less than 25 sec/ 50 g of mixture, the improvement comprising micronized cellulose fibers having an average length in the range from about 1 μ but less than 70 μ and a diameter in the range from about 1 μ to 20 μ , the lubricant and fibers together present in an amount less than 2% by weight of the powder metal mixture, the ratio of lubricant/fibers being in the range from 1: 2 to 10 : 1.
- 25 5. A method for making a homogeneous ferrous powder metal mixture comprising, combining metal particles having an average particle diameter smaller than about 150 μm with a modified lubricant consisting essentially of a lubricant and cellulose fibers together present in an amount less than 2% by weight of the mixture, the lubricant having an average particle equivalent diameter smaller than 50 μm , the cellulose fibers having an average length smaller than 70 μm ; and,

mixing the mixture for a time sufficient to yield specifications of (i) Hall apparent density numerically no smaller than 10% less than that obtained for the same powder metal mixture made with a conventional lubricant without the cellulose fibers, and (ii) Hall flow rate which is at least 25 sec/ 50 g of mixture.

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6. The method of claim 5 wherein the Hall apparent density is greater than that obtained for the same powder metal mixture made with a conventional lubricant without the cellulose fibers.

10 7. A modified lubricant adapted for use in a powder metal article, the modified lubricant consisting essentially of a lubricant selected from the group consisting of an inorganic compound, an organometal compound, and a wax, the lubricant having an average particle diameter smaller than 50 μm , in combination with cellulose fibers having an average length smaller than 70 μm , the weight ratio of lubricant to fibers being in the range from about 1 : 2 to
15 10 : 1.